



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,582	07/10/2006	Mark Bischoff	3081.154WOUS	2301
24113 7590 03/10/2010 PATTERSON, THUENTE, SKAAR & CHRISTENSEN, P.A. 4800 IDS CENTER 80 SOUTH 8TH STREET MINNEAPOLIS, MN 55402-2100				
EXAMINER EVANS, GEOFFREY S				
ART UNIT		PAPER NUMBER		
3742				
MAIL DATE		DELIVERY MODE		
03/10/2010		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/565,582

Applicant(s)

BISCHOFF ET AL.

Examiner

Geoffrey S. Evans

Art Unit

3742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 October 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 30-62 is/are pending in the application.
- 4a) Of the above claim(s) 36-47, 50, 58 and 59 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 30-35, 48, 49, 51-57 and 60-62 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SI/08)
Paper No(s)/Mail Date 20060123, 20080709
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Applicant's response of requesting that claims 36-47,50 and 58-59 be withdrawn is being treated as an election without traverse of Species X, claims 48,49 and 50.
2. Claims 36-47,50 and 58-59 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 21 October 2009.
3. The drawings are objected to because in figure 1 element 1 should be labeled as a "laser", element 2 as a "pulse shaper", element 3 as "processing unit", element 4 as "optical amplifier", element 5 as "measurement unit" and element 6 as "control unit". In figure 2 element 7 should be labeled as "laser", element 8 as "amplification stage", element 9 as "pulse shaper" and element 10 as "control unit", and element 11 as "objective" as required by 37 CFR 1.83(a). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet

submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 30,31,32,33,35,53,55, are rejected under 35 U.S.C. 102(b) as being anticipated by Neev in U.S. Patent No. 6,482,199 (evidenced by Liu in U.S. Patent Application 2004/0017560 and Some in U.S. Patent No. 7,539,045). Neev discloses a method of material processing with laser pulses that can be as small as 1 femtosecond (see column 8, line 30) to as large as 10 milliseconds (see column 8, line 31) and adjusting the pulse parameters before or during the process (see column 6, lines 31-65) and further that the pulse parameter can be the pulse duration (see column 10, lines 2-3). Liu in U.S. Patent Application Publication No. 2004/0017560 is solely being relied upon as evidence that changing the pulse width adjusts the spectral bandwidth of the laser pulse (see paragraphs 21-26) and figure 2 that the amplitude is also changed and so claim 32 of the instant application is met by Neev. Some in U.S. Patent No. 7,539,045 is being relied upon as evidence that the laser pulses that are femtoseconds or picoseconds in duration have large spectral bandwidth (see column 2, lines 50-52).

Citation of Liu and Some in this 102(b) rejection is proper in accordance with MPEP Section 2131.01 since they show that some characteristics of Neev reference are inherent. Regarding claim 31, adjusting the pulse width also changes the heat effected zone and hence the surface structuring. Regarding claim 33, the spectral bandwidth is considered to be a spectral parameter. Regarding claim 35, Neev discloses adjustment during the process (see column 6, lines 58-65) and is therefore considered to be dynamic. Regarding claim 53, the optical elements in element 420(especially the pulse stretcher (element 426), the regenerative amplifier (elements 430,434) and the pulse compressor (element 436)) are considered to be a pulse shaper that sets the pulse duration and hence the spectral bandwidth and spectral amplitude. Regarding claim 54, see the regenerative amplifier (elements 430 and 434) of Neev. Regarding claim 55, Neev further discloses a measurement unit (a feedback transducer, element 1472, see column 55, line 35 to column 56, line 12) and a control unit (a laser controller, element 1478, see column 56, lines 11-12).

6. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neev in view of Stuart et al. in U.S. Patent No. 6,268,586. Stuart et al. teach adjusting the polarization of a laser beam with pulses preferably shorter than 10 picoseconds (see column 5, line 23) for improving the quality of the machining. It would have been obvious to adapt Neev in view of Stuart et al. to provide this to improve the quality of the edges being processed (see abstract of Stuart et al.).

7. Claims 48,49,56,57 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neev in view of Detalle et al. in U.S. patent No. 6,532,068. Detalle et

al. teach monitoring the spectrum of plasma with an optical sensor, i.e. a grating spectrometer (see column 5, lines 21-39). It would have been obvious to adapt Neev in view of Detalle et al. to provide this to determine the concentration of a material being ablated.

8. Claims 51 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neev in view of Thompson et al. in U.S. Patent No. 6,195,164. Thompson teaches preliminary calibration of a laser by previously using a test surface (workpiece). It would have been obvious to adapt Neev in view of Thompson to provide this to adjust the pulse width to the desired amount which would inherently adjust the spectral bandwidth.

9. Claim 61 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neev in view of Lai in U.S. Patent No. 5,984,916. Lai teach using a femtosecond laser to ablate a cornea. It would have been obvious to adapt Neev in view of Lai to modify Neev as required to process human eye tissue.

10. Claim 62 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neev in view of Hacker et al. in the article "Micromirror SLM for femtosecond pulse shaping in the ultraviolet". Hacker et al. teach pulse shaping a femtosecond pulse by phase modulation (see column 3 of page 711) using a micromirror SLM. It would have been obvious to adapt Neev in view of Hacker et al. to provide this to programmably adjust the phase modulation of the laser beam by suitable programming of the controller of the micromirror SLM (i.e. the micromechanical system MEMS).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey S. Evans whose telephone number is (571)-

272-1174. The examiner can normally be reached on Mon-Fri 7:00AM to 3:30 PM (flexible).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu Hoang can be reached on (571)-272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Geoffrey S Evans/

Primary Examiner, Art Unit 3742